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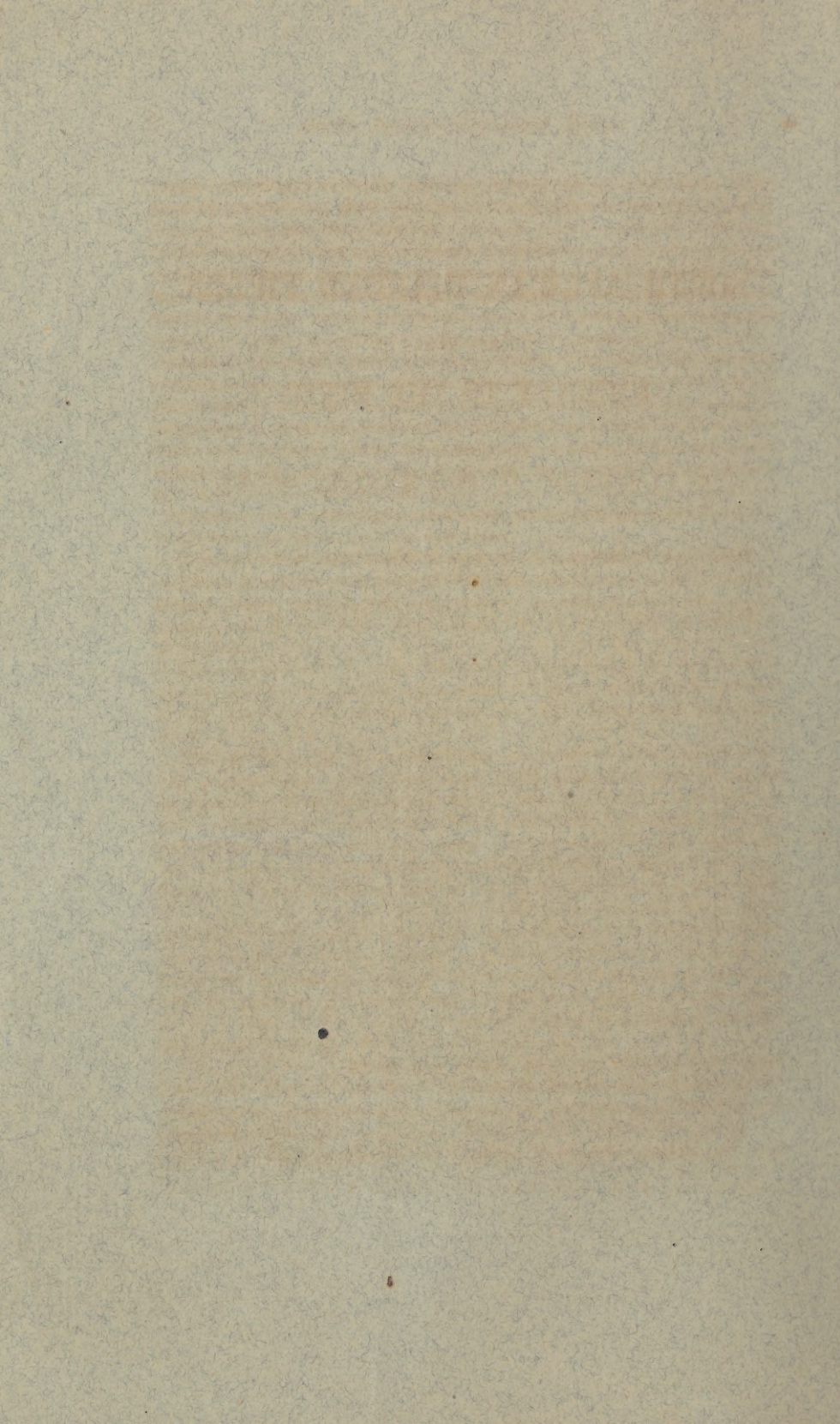
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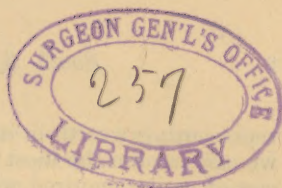
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WILLIAM J. MORTON, M. D.

Paper read at the Meeting of the American Geographical
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SOUTH AFRICAN DIAMOND FIELDS,

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When we recall the frequent attention which is now directed to varied and remote parts of the globe, it is, perhaps, a little remarkable that Southern Africa has met with so little recent notice in America; particularly as this region fairly claims from Americans more than ordinary interest, since here two sister republics—the Orange Free State and the Transvaal—have hewn out a history for themselves. And their existence might, indeed, have claimed a longer obscurity but for the brilliant discovery within their borders of diamonds, which have cast their lustre over the scene and attracted thither the practical energy of working men and capital.

I can, perhaps, open the way to a larger interest in Southern Africa and her States by describing the diamond fields, which, aside from the part they have played in vivifying the country, offer in themselves points of extreme interest and novelty.

The practical mind of our day still finds moments in which to delight in the romances of Sinbad the Sailor and his experiences in the Valley of Diamonds. And a visit to the diamond valleys of to-day offers, perhaps, the nearest modern realization of the dream. And if the toils and reverses of that ancient traveler were manifold and severe, the modern seeker's experience will hardly fail to be a parallel to that of his mythical predecessor.

That a land is unknown and unexplored is sufficient to clothe it with fervid growths of the imagination. The word Africa conjures up a hazy vision of strange and remarkable facts and conjectures. If we add, then, the familiar word of "diamond,"

representing wealth in its most concentrated and dazzling form, we can pardon the most prosaic for indulging in dreamland fancies of easily acquired wealth.

But it is my office and pleasure to-night to ask you to go over the scene practically with me, giving a moment only to the journey out to Cape of Good Hope, but devoting most of our time to the journey up to the diamond fields and life at the diamond mines.

And at the very outset I feel burdened with the difficulty and responsibility of selecting from the mass of detail attendant upon two years' residence in Africa that part which, in this necessarily compressed account, may prove interesting. And in this brief survey of an hour I can only hope to outline, in the roughest manner, a picture which must afterwards be filled in by details which time will not here allow.

There is at present no steamship communication between an American port and the Cape of Good Hope.

It is, therefore, necessary to make the journey by way of Southampton, England, whence excellent steamers leave weekly for the Cape. Some stop at Madeira, Ascension and St. Helena on the way, while others make the voyage direct, generally in from 23 to 26 days.

The opportunity of even a half-day's visit to these three places should not be lost, since each, in its limpid, aqua-marine setting of the soft waters of the South Atlantic, impresses upon the memory its own characteristic and peculiar picture.

On the fifth day from Southampton, after the customary tossing and pitching of the steamship in the Bay of Biscay, Madeira is reached. Madeira, land of trees clad in constant verdure, of new and tropical vegetation, with flowers always in bloom, charms the traveler from northern lands. Her vineyards, once deserted for the sugar crop, are again being established. About the large town of Funchal there is an air of antiquity and of quaintness. The streets are narrow and very steep, and no vehicle is seen except the palanquin, borne by sturdy carriers, or the comical cab on sledge runners, drawn by oxen—for wheels, owing to the hills, are impossible. There is a sombre cathedral and more sombre jail, but all else is bright and gay, especially the vivid colored dress and vivacious manner of the inhabitants in the numerous shops and flower and fruit markets.

From this lovely island the vessel sped on towards the Equator, a direction which we all began to realize in the fitful, sultry weather, with unexpected showers and squalls, until we finally found ourselves almost helpless from the lassitude occasioned by the heat. The berths below became unendurably stifling, and

many had their mattresses placed on deck for the night. Gentlemen appeared in thin linen suits, and ladies in their thinnest muslins. To try to read was to fall asleep, to move, an aggravation; even talking was a bore, and suspended. The sea glassy, and unruffled by any breath of air. But our faithful engine was not won over to listlessness, and soon carried us beyond this enervating zone.

And now we touched at Ascension, a red-brown mass of lava thrown up from out the sea; taken by the British Government for use as a naval station during Napoleon's confinement at St. Helena, and since retained as such; famous for the jealous care with which it is guarded, and for the mammoth turtles, weighing from 500 to 800 pounds, which are constantly captured upon its shores, and form its only supply of fresh meat. Not a spear of grass or a single tree grows upon the island.

I walked along a magnificent beach, a mile and more in length, which looked like yellow sand, but on examination proved to be wholly of round, polished grains of sea shell.

Upon this beach the turtles come up to lay, and are espied by a look-out upon a distant tower, who straightway dispatches a boat to cut off their retreat to the water. The turtle thus intercepted is skillfully turned upon its back and towed to walled-in pens of solid masonry on the edge of the sea. Walking around these pens on their walls, I saw, perhaps, a hundred clumsy occupants clambering over one another or lying with just their noses out of the pool.

I was told there were about two hundred inhabitants upon the island, but I seemed to see almost no one. Long coal sheds, idle machine shops and piles of weather-beaten ship fittings, with a hot, listless, intense New England Sunday stillness, seemed its chief features. Taking a big turtle with us, we sped on to St. Helena, climbed Jacob's ladder, a loft series of steps cut into the solid rock, and made our way to Napoleon's former residence and tomb, and then on to the Cape.

The air now daily grew more cool and invigorating, and on the 26th day at noon we made out the dim cloud of Table Mountain dead ahead, and soon on our left the long line of African coast stood out in bold relief, its breakers, as it seemed to us, dashing to incredible heights.

Our first view of the shore excited that wonder which all things continued to produce in this new land.

The glassy sea undulated in long rolling swells of unaccustomed size and height, its surface covered with water-fowl strange to our eyes. Oily backed penguins dodged in affright from our bows. Over our heads circled a huge albatross. To-

wards evening we made out the white line of dwelling houses hugged up under the now huge black Table Mountain. As the sun set, the anchor dropped. Night came quickly, and out sparkled the myriad tiny lights of Capetown.

In the morning the steamer made her way into the dock, and the town lay extended before our eyes, flattened out on the mountain slope, with flat-roofed one to two-storied houses, and thronged with its motley crowd of whites, malays and negroes. We luxuriated in fruit, and rested our eyes with the strange vegetation. Here are thirty thousand inhabitants, with a sufficient admixture of the Dutch element to give the city a quaint and slow appearance. With the familiar picture of naked Hot-tentots on a sandy coast collecting buchu still in my mind, I was agreeably surprised to step from the steamer to a Hansom cab, and be whirled along the streets of a well ordered city to an excellent hotel. To do any justice to Capetown would require a volume by itself.

And we come now to the less traveled portion of our journey.

There are three routes from the African coast to the diamond mines. The shortest, but least traversed, owing to its greater distance as a starting point inland, is from Natal. The second, that from Port Elizabeth, requires two days' further journey from Capetown by water to the town of Port Elizabeth, and is now the only route traversed by a regular line of stages, which leave every week, crowded with passengers, and make comparatively comfortable trips.

But at the time of my journey up to the diamond country, three years ago, the third—that from Capetown direct to the mines, across the Karroo and Gouph deserts—was the most traveled. And since this latter route is now wholly disused for passenger travel, it is well to record its features. From Capetown we had 750 miles to go—north, a little to the east. For \$80, I secured a seat in the wagon or coach of the Inland Transport Company. This wagon was about forty feet long, and box shaped, with open sides and ends, having five transverse seats, with room for three persons on each seat. Fourteen was our complement of passengers, with 40 lbs. of luggage allowed to each. On the sides, top and underneath were lashed our baggage and the company's express parcels, until we looked like a country pedler's wagon on a huge scale.

We tried our seats, and wondered how we should like seven successive days of travel in them, with but one opportunity, and that on the third day, for sleep, out of the coach, and then only for five hours.

My fellow passengers were most agreeable gentlemen and

ladies. Several were landed proprietors going up to see after their investments in the mines. One English gentleman, of large means, was on his way to the interior for three years of elephant hunting for pleasure. Another was simply going out to see the mines, while several were diamond merchants going up to buy.

From Capetown to Wellington, our first seventy miles, we go by rail—the big wagon on a platform car, all equipped, minus the horses. Steaming through the ten mile stretch of the fertile Paarl, dotted with farm houses, and here and there a school-house or church spire, we reached Wellington in three hours.

A crowd of passenger carts, owned by Malay drivers, with bee-hive hat and long whip, awaited the arrival of the morning train, and outrivaled a London or New York cabman in their vociferous solicitations. Their carts were soon filled, and tearing off at a rapid pace for the village. Here, at the hotel, we partook of what was to prove our unvarying diet for days, viz.: mutton chops and coffee.

This meal finished, the company's bugle sounds; we hear "all aboard" shouted by the guard, and hasten to secure our stated seats. To crowd fourteen into that wagon seemed hopeless, as one examined the seats covered with overcoats, rugs, valises, soft hats, canned biscuit, rifles, &c., &c.; but squeeze in we did. Snap went the whip, every time like the report of a pistol, and off dashed our eight horses, plunging, rearing, snorting and kicking, heading now this side, now that, almost facing about at times. And this they would have done, did they not dread at each attempt an encounter with the formidable whip, whose reach covered fifty feet, twenty-five of strong bamboo pole, and twenty-five of braided lash. No danger of leaving the road, for we were upon the level plain or "veldt," offering miles of room on either side without fear of upset. Such a start soon shook us into what appeared to be our natural and proper places. And here a word as to the manner of staging and driving. Each team of eight horses, or sometimes mules, is in charge of two drivers, and takes up the coach at one station, carrying it on from 30 to 40 miles to the next, where a fresh team and new drivers await, and the old one rests until the arrival of the coach from the opposite direction. The "guard" accompanies the coach throughout its journey, and looks after the comfort of the passengers. Of the two drivers, the sole duty of the chief, generally a "Cape-boy" or mulatto, is to guide his eight horses by aid of the long whip already mentioned. This he uses like a fly-rod, stinging and nipping each horse in the line as he needs it, at the same time urging him on by name. On the front seat also sits the second "driver," a stalwart negro, whose duty

consists in silently holding the reins, no easy task. As far as the treatment of the team was concerned, the whole journey was an outrage upon horse-flesh and humanity.

Leaving Wellington far behind, towards afternoon we began the ascent of the Drackensberg mountains through the famous Bain's Kloof. Tortuous hardly expresses the way—often around horseshoe curves exactly facing the course of five minutes before—the interspace of the horseshoe a deep, rocky ravine.

Still up we toiled, the road cut into the sides of the mountain—a perfect jumble of peaks they seemed. No fence or guard on the edge, and nothing but the active tip of that long whip to hinder the horses from plunging over, taking wagon and all.

On the outside of the road a long stretch of magnificent panorama of mountain, plain, and dotted village of Wellington. On the inside the black face of the mountain, and by the road's edge a sparkling, crystal stream, fed at intervals by little cascades springing off the mountain's side; from every crack and crevice a luxuriance of fern growth. The top reached, we took our last view of the sea, just visible as a white line. Our descent was precipitous, and always along the edge of the same yawning chasms. But, once down, we made good time, changing horses every 30 to 40 miles, and reaching Worcester, a large, handsome town, with finely shaded streets, in the bright moonlight of our first evening. Then on through the night, and as dawn woke us from our jolted sleep, found we were skirting the edge of a pretty river, its banks densely wooded and alive with turtle-dove and bright plumaged birds.

But the scene changed quickly as we entered fully upon the Karoo, a desert hundreds of miles in extent—a desolate, barren waste. The hot simmering air rises in visible, flickering waves, from its overheated, pebbly surface. No boundaries rest the eye. No sound breaks the oppressive stillness. Little running whirlwinds play with the light, choking dust, or a sudden gust blinds men and horses. Scarce a plant shows its stunted growth; and, as if to crown the mockery of the scene, suddenly, far in the distance, appear the shining lakes, the little wooded islands, and promontories of the mirage.

No wonder many a traveler has turned aside to verify the cruel delusion. By the roadside, constantly recurring, lie the whitened skeletons of oxen and mules, fallen by the way. And more than one weary foot traveler to the mines has died on this arid plain.

Water, and food as well, as of course a change of horses, awaited us at many appointed stations.

On the third day the Gouph, another desert, and a continuation of the Karroo, was reached.

Of many river beds that we crossed, not one contained water. One saw the worn channel, the rippled sand, and stranded float-wood, as also trees upon the banks, but no water. But in a moment, even while we are crossing, the water may come tumbling, rushing down, and the stream be impassable for days. Such streams are the Bloed River, the Weykeh, and the Bitter Water. After crossing the Bloed we reached Uitkyk (translated "look-out"), where came the announcement of five hours' sleep. A welcome boon to a tired crew, who for four days, awake or asleep, had alternated between seat and roof of that wagon, or banged against a neighbor's sides, until apology was out of the question.

A few words of description of this farm will apply to many, scattered at great distances apart, along the road. The house was large, one story in height, built of sunburnt brick, and surrounded with a veranda.

In the vicinity were squalid huts of native laborers. Near by, also, a walled-in garden, artificially irrigated by a network of little canals, and luxuriant in fig-trees, pomegranates, orange and lemon-trees, luscious grapes, and useful vegetables. Entering the house, one finds a large sitting-room, with cemented floor, covered with well-cured skins of antelopes, the chairs adorned with elegant skins of leopard, silver jackal, and foxes; perhaps a melodeon, and some prints.

Such an establishment belongs to some rich Boer farmer, who owns thousands of acres, or one may fairly say, miles of the barren plain—that is, barren as compared with English or American pasture. But, nevertheless, such tracts are covered with a stunted "bush," six inches to a foot high, on which sheep and goats thrive amazingly well, and cattle find a fair sustenance. This farmer's flocks number often as many as ten thousand. His labor is done by natives. The situation of this little settlement depends wholly upon the water supply, and as it rains only during a portion of the year, some slight depression is chosen in the plain where there is a large surface drainage, and a long dam built, to keep the water during the dry season. Such a shallow sheet is called a "dam." The household supply of water comes from this, and to it daily are driven the thousands of thirsty sheep. Should the water fail, or the dam give way, as it sometimes does from the burrowing of the land-crabs, then all the flocks must perish, and men hasten away. In some cases the water secured by rainfall is supplemented by a small supply from a spring. And in the districts beyond the Orange River there are natural basins, exceedingly shallow but broad, called "pans," which also hold water through the dry season, and thus become a chosen site for the Dutch farmer.

Another essential feature of the farm is the "kraal," a circular

enclosure, into which the sheep are driven at night to protect them from wild animals. The floor of this enclosure grows, with the accumulation of years of occupation by so many animals, and is finally quarried, as it were, into square blocks, from which permanent and solid walls are built to each "kraal." The same block also, well dried, form the ordinary fuel. At many farms I found that the sheep had at times suffered enormously from hoof rot—a result, no doubt, of never changing the site of the "kraal." The sheep raisers of America, I believe, often change the position of their enclosure.

Our allotted rest of five hours at Uitkyk, which has furnished this opportunity of referring to farms, flocks, dams and kraals, was over at two o'clock in the morning, and we now clambered in for a long stage to Beaufort, still over the same tedious, monotonous stretch of waste, always the same glowing, pebbly surface, scantily clothed in a brown garment of "bush."

At one o'clock of this day we entered Beaufort, a large town of perhaps a thousand inhabitants. Things again looked quite civilized as we drove down the hard, level, main street, with trees regularly planted on either side, well-kept sidewalks, and pretty, low brick houses just back from the street. In some of the gardens, squat upon the ground, or in others strutting about, were huge ostriches, quite tame, and kept for their feathers.

From Beaufort we pushed on rapidly, making no further stops except for a change of horses, and to eat. The passage of two down coaches, sighted like vessels at sea, long before we met them, afforded a pleasant excitement.

Two days more brought us to Hopetown, a village of about two hundred inhabitants. The houses were built solidly of brick, and looked exceedingly comfortable. The sight of trees once more blessed our eyes. This town, previous to the discovery of the diamond fields, was the last point in the interior at which were gathered the collective evidences of civilization in the shape of good homes and municipal organization.

Half a mile beyond Hopetown we reached the rolling flood of the mighty Orange river, so named from the color of its water. The stream at this point is at least 300 yards broad, and from 30 to 40 feet deep. Its banks are perhaps 60 feet high, and of mud or sand. The current is exceedingly swift, and plays strange havoc with the shifting banks, particularly as the stream is subject to frequent floods when augmented by rain or melting snows of the Drackensberg Mountains, whence it takes its rise. Our wagon was carefully guided down a cutting in the steep bank, and on to a pont or flat-bottomed boat, and ferried across. It was a steep pull up on the opposite side for the horses.

Here long lines of ox-wagons were waiting to be ferried across.

The wagon and sixteen oxen are driven on at once. Owing to frequent floods, the river is often impassable for days, and hundreds of wagons collect on either side awaiting its fall.

We were now only a few hours' distance from the mines. On the afternoon of the seventh day all were on the watch for the first sight of the famous "Fields," the word "fields" being a general term applied to the whole diamond producing region, but for us meaning that part of the district called the "Dry Diggings," in contradistinction to the "River Diggings," twenty-five miles further. As we gained the summit of a swell of ground, before us, only a few miles away, stretched what appeared to be low, yellow hill ranges, but which proved later to be the earth excavated from the mines of Dutoit's Pan and Bultfontein. Scattered over the plain, and densest at the foot of the sand mounds, was built a glistening white-roofed city. The horses pricked up their ears as they recognized the end of their last long stage. The road soon skirted the edge of a shallow lake called a "pan," formerly owned by a Mr. Dutoit, whence is derived the name of the town built at one end of it.

Crowds of curs of every size and color greeted our entry. We crossed the large market square, drove down the long main street, and drew up in front of the office of the Inland Transport Company, where a large crowd, gathered from curiosity and desire to get the latest news, awaited our arrival.

We have now passed over the real barrier between the diamond fields and the world, viz., the journey thither, from here a distance of ten thousand miles. We will suppose the traveler established and rested, and ready to answer the enquiry of what manner of place it is, first defining his position historically and geographically.

Capetown was founded in 1650, by the Dutch, who gradually extended their possessions to the Orange River. The Cape Colony was occupied by the English in 1806, in whose possession it has since remained. The Dutch grew restive under what they considered the oppressive government of their new masters, and many of them determined to emigrate to the unknown regions beyond the Orange. The principal exodus occurred from 1836 to 1840. At that time five thousand Dutch colonists, with their wives and families, gathered together their flocks, their herds and their horses, packed all the necessary household goods and utensils into huge ox wagons, each drawn by twenty oxen, and thus, as it were, with their lives and their property in their hand, braved the dangers of savage, beast and waste, and laid the foundations of the Orange Free State and Transvaal Republics.

One party, nine hundred wagons strong, after two years of weary wagon life, stood upon the Drakensberg Mountains, and

looked down upon the lovely Natal. With great toil they let their wagons down the steep mountain sides, and established their scattered camps or "laagers" on the fresh green meadows. As they pressed to the coast they came upon a little settlement of the English. A collision of arms ensued, and the Dutch—dispirited, it seems, by the prospect of contention and broil, and servitude to the flag from which they had just escaped—withdrawn back again over the Drackensberg to the plains of the unborn Free State and Transvaal.

The emigrants thrived, but were not left in peace. The British Government still claimed them as citizens, and in 1848 proclaimed their territory to belong to Great Britain, but again formally abandoned it in 1852 and '54, at which time the two Republics began their political life, it being agreed by formal and ratified treaty "that the British Government should not interfere between the natives and other inhabitants of the country." For it was thought, and plainly stated, that the Dutch settlers would interpose a useful zone of defense between the Old Colony and the wild tribes beyond.

Two rivers, the Vaal and the Orange, take their rise within a few miles of each other in the Drackensberg Mountains of the eastern coast and, at first, flowing in opposite directions, at length gradually sweep around to the west and unite some two hundred and fifty miles from their sources.

The enclosed space is the Republic of the Orange Free State. The small western angle of this enclosure constitutes the diamond fields of South Africa. Across a mission map of this very tract, printed in 1750, is written: "Here be diamonds." The natives had long used the diamond mechanically for boring other stones, and made periodical visits hither to procure their supply. But their modern discovery came about in this wise: A certain John O'Reilly, trader and hunter, on his way from the interior, reached the junction of the rivers and stopped for the night at the farm of a Dutch farmer named Van Niekerk. The children were playing on the earth floor with some pretty pebbles they had found long before in the river. One of these pebbles attracted O'Reilly's attention. He said, picking it up, "That might be a diamond." Niekerk laughed and said he could have it. It was no diamond. If it was there were plenty around there. However, O'Reilly was not to be laughed out of his idea, and said that if Niekerk didn't object he would take it down with him to Capetown and see what it was, and if it proved to be of value he would give him half the proceeds. Niekerk lightly assented and O'Reilly set off. On the way down, a long journey, he stopped at Colesburg, at the hotel, and showed the pebble, scratching with it a pane of glass. His friends, laughingly, scratched glass with a

gun-flint and threw the pebble out of the window, telling O'Reilly not to make a fool of himself. However, O'Reilly persevered, got it to Dr. Atherstone, near the coast, who announced that it was in truth a diamond of $22\frac{1}{2}$ carats. It was sold for \$3,000. I am glad to say that O'Reilly divided fairly with Niekerk. The latter remembered that he had seen an immense stone in the hands of a native. He found the native, gave him 500 sheep, horses, and nearly all he possessed, and sold it the same day to an experienced diamond buyer for \$56,000. This was the famous "Star of South Africa." The natives now crawled over the ground and found many more, and the excitement grew and became intense. By 1869 parties in ox wagons had worked their way over the weary plains to the Vaal River. From all parts of the colony and from foreign lands, people swarmed, and soon, like the creation of a dream, a tented city of ten thousand and more grew at Pniel and Klipdrift on the opposite banks of the stream.

Diamonds were found plentifully and of excellent quality by sorting over the boulder-drift of the banks. The excited crowds shifted their quarters up and down the river, continually making new discoveries during 1870 and '71. Besides Klipdrift and Pniel, there were crowds of people at Gong Gong, Union Kopje, Colesberg Kopje, Delpont's Hope, Blue Jacket, Forlorn Hope, Waldek's Plant, Larkin's Flat, Niekerk's Hope, and numerous smaller places. The Vaal River is broad and beautiful, its banks densely wooded with mimosa and willow, and its course broken by little tree-clad islands. No fabled river of antiquity offered stranger food to the imagination, with its bed made up of brilliant pebbles of agate, jasper, chalcedony and quartz, quartz crystals, and scattered in with this worthy assembly—diamonds.

But the tide of fortune was soon to turn into less pleasant directions and assume mightier proportions.

The last stage in the journey to the "River Diggings" was at Dutoit's Pan. Here in the sand small diamonds were discovered; even in the mud that plastered the sides of the proprietor's house. This soon became known along the river, and now occurred a remarkable "rush" to Dutoit's Pan and Bultfontein, which adjoin each other. Dutoit's Pan is situated on the open plain twenty-five miles from the river. The mine proved to be a diamondiferous area of about 23 acres. The multitude that flocked from the "River diggings" was here met by the throngs crowding in from every other direction, and soon a seething population of forty thousand people built up a town around the mine. Old De Beers, a small mine only a mile away, was next discovered. Then came the last, and, up to this time, final discovery of "New Rush," or

Kimberley, undoubtedly the site of more natural wealth than any other known spot on the surface of the globe.

All this time the proprietors of the farms on which the diamonds were being found were utterly helpless to prevent the appropriation of their property. The diggers "rushed" the farms and dug out mines, dictating such terms as they pleased to the actual owners of the soil.

"Rushing" seems to have been the order of the day, for now the British Government stepped in and annexed the whole diamond-producing district. The Orange Free State, in virtue of the treaty I have quoted, owned the territory enclosed by the Vaal and Orange Rivers—the treaty itself defining these boundaries. A petty Griqua chief, Waterboer by name, dwelling by sufferance within these limits, set up a claim to the diamond region and asked the protection of the British Government. The Government answered by formal proclamation of 1871 annexing, under the title of Griqualand West, what it had as formally abandoned and ceded to the Free State in 1854.

The injustice of this annexation was long and sturdily contended by the Free State, but to no purpose, until the recent scheme of a confederation of all the South African States under the English flag, was brought forward by Earl Carnarvon, Colonial Secretary of England. This proposition the Free State refused even to entertain until her wrongs were adjusted. Mr. Froude, the eminent historian, was sent as general commissioner, and the matter was finally settled by the payment of \$525,000 indemnity. Griqualand West, with its diamond fields, thus remains an English Crown Colony; and the Free State can listen to plans of confederation.

We have thus far followed the digging population from the "River Diggings" of 1869 and '70 to the "Dry Diggings" of Dutoit's Pan, Bultfontein, Old De Beers, and Kimberley, or New Rush.

Here, then, within a radius of a mile, is the heart and focus of the diamond producing industry of South Africa—or, rather, of the world. Each town is built around its own mine. Three, Dutoit's Pan, Bultfontein and Old De Beers, no longer enjoy their palmy days; still retaining, however, a fair population. The diminished price of diamonds as the market became flooded, the increased difficulties of working, as the depth increased, and above all, the short-sighted policy of allowing the soil which should have been removed entirely out of these mines, to accumulate within them and choke up the unworked portions, have been the principal causes of their abandonment, as well as of the general diminution of population of the Dry Diggings; and practically at the present time all the labor and energy devoted to

the search for diamonds is centered in the fourth town, that of Kimberley, which may be said to contain the crystallized result of all the "digging" experience of the diamond fields.

To it let us direct our attention. Here is a city in the desert—dropped at random, as it were, from the clouds, so detached does it seem from all the ordinary surroundings of civilized communities. A city built of tent-cloth, and corrugated iron and wood, and here and there substantial brick.

As the traveler approaches from afar the sea of buildings seems to lie flattened out upon the ground, since they are all of one story only in height; their broad roofs, whether of canvas or iron, glistening white in the burning sun. Not a tree is to be seen, nor does a single lofty building break the white, flat-roofed monotony. But from whatever direction one comes from the surrounding plain, the most prominent sight is the lofty range of sand mountains, rising up from out the centre of the town, and overtopping everything. This we know to be the soil which has been excavated, wholly by hand labor, from the original surface—thirteen acres of the Kimberley mine—and thrown up around the edge of the gradually deepening pit, just as the ant on a smaller scale piles up a circular ridge around its hole.

On the outskirts of the town are seen the squalid hut of Hottentot or Koranna, or the simple tent of the humble digger. Here, too, rest many of the Colony ox wagons—such as would be called in our west, prairie-schooners—anchored, as it were, for months—affording home and shelter to families who have come in them to make their fortunes, but have not yet been sufficiently successful to build a house.

And here begin the undulating mounds of blue clay, many of them as large as the houses, carted from the central mine to the "*Compounds*," or enclosures of the different searchers for diamonds, and already examined and abandoned. Further inward the mass of buildings appears confusing, but as the traveler proceeds, confusion yields to a rough sort of order. Long and straight streets, with numerous cross streets at right angles, map out the way. What appeared at a distance a clump, becomes defined into an orderly arrangement, and the astonished visitor finds himself traveling along a pleasant way, on either side of him a succession of small, fenced-in plots or freeholds, each with house, outbuildings and garden. A thousand and more independent homes greet his eye, each with the stamp of the individuality of its constructor upon it. This one of corrugated iron, that one of canvas, another of wood, another of brick, but all with veranda or portico, and perhaps a growth of creeping plant. Anon an immense pile of corrugated iron constructed into church, theatre or public hall. At last the space between

the buildings disappears and each stands side to side. We are now in the purely business part of the town; every door that of a diamond buyer's office, a "canteen," corresponding to our drinking saloon, or well furnished store. This heart of the town lies round about the mine.

But the streets are not empty; they present a novel scene of life and animation. People move about with energy and a purpose, activity and industry imprinted upon their faces. The two-wheeled vehicle, or cab, flies by with its hurried occupant. Dog-cart and spider (the colonial term for our American buggy) are everywhere to be seen. Many are on horseback. The big colony ox-wagon, with its sixteen oxen, dusty voor-looper, or leader, and driver armed with his long whip, trail along the street, just up, perhaps, a two months' weary journey from the sea, or down from some neighboring farm, laden with delicious grapes, figs or oranges, for sale by the wayside.

Carts bearing loads of freshly-excavated soil from the mine, or returning thither, pass and repass all day long. Between Kimberley and Dutoit's Pan, a distance of two miles, sixty passenger carts ply for hire daily; and these carts earn at least \$10 per day each, on an average. That is to say, the public spend \$200,000 a year in traveling between these two towns alone.

A stream of foot passengers lines the side-walks, while along the centre of the streets crowds of naked negroes, often singing their weird songs, go to and fro from their work. Or perhaps a gang of "raw" natives, just down thousands of miles from the countries to the North, dusty, thin as skeletons, foot sore, dirty and strange, with barbaric utensil and ornament, thread their way along, hooted at, and pelted with dirt and stones by their better initiated countrymen. This reception of the neophyte is of daily occurrence, and the ear can readily follow the direction pursued by the entering band by listening for the succession of derisive yells which greet it at each step of its progress.

The negro—certainly at first—attracts the newly-arrived traveler's attention. And once and for all, it is well to banish from the mind the idea that the negro of South Africa looks like the black man as known to us here in America. Our former slaves are descended from a much inferior race. The native at the diamond mines belongs to a superior and dominant type called, in general, Kaffirs, who have overrun and conquered the territory south of the Zambesi river from Hottentot and Bushman. They are, physically, splendid specimens of humanity—walk erect and with careless freedom and grace—go quite naked, except for the waist-cloth, and swinging blanket for cool nights.

Their simplicity and good nature is refreshing, while their bravery, even against well-disciplined troops, is a matter of history.

Everything the white man wears is to them in the light of ornament, and it is a study to watch the merry crowd file along. One stalwart fellow wears only a vest; another has found and put on an abandoned tall hat. One wears a gaiter-boot, or old shoe, picked up by the road-side, or a long stocking and no boot, or simply a shirt. Another struts proudly by in the bright-buttoned uniform of a soldier's coat, his brown legs in marked contrast to its bright red. Every cast-aside paper collar is seized and donned, and all this soberly and demurely, and in ignorance of its comicality.

The native laborer comes mostly from a region of teeming population, between 16° and 22° of south latitude—that is to say, from the country between the Zambesi and Limpopo rivers, beyond the northern border of the Transvaal Republic. As a fair sample of the tribes represented, I quote the returns of the Native Registry Office, at Kimberley, for the month of March, 1876: Mahowas, 1,086; Makalakas, 19; Batlapins, 170; Basuts, 186; Baralong, 5; Bechuana, 85; Shangans, 142; Colonial, 4; Griqua, 3; Zulu, 123; Koranna, 4—Total, 1,827, registered for a month. However, the number registered is, as a rule, probably not more than one-half, as the law requiring registration has never been possible to enforce.

These natives have been pouring in crowds into the diamond fields for seven years, at the rate of 30,000 a year; each gang of from thirty to forty men, after a journey on foot often of 1,000 miles, during which many of them die from starvation and cold, remaining and working only just long enough to supply each member of it with gun and ammunition—i. e., about three months—and then returning to their land. They carry back no money, but simply a gun; and they come for nothing else.

The English Government permits the sale of guns to them indiscriminately; and it is a well-established fact that 300,000 have been thus disposed of.

These natives declared war upon the Transvaal Government a few months ago; and we now see what all this preparation meant.

There are not wanting observers, even in English circles, who assert that this war has been incited by British settlers in the gold-fields of the Transvaal, and who deprecate in the warmest terms the indiscriminate sale of arms to the natives, to be turned against the pioneer, whether he be Dutch or English.

The defeats of the Dutch in this war have been announced prominently; and we are told again and again that the little

republic must sue for the aid of British protection to save its very existence.

With the feelings of the free state assuaged by the indemnity, and the Transvaal in extremity from war, it would seem as if both might wheel into line under the new confederation.

The idea is grand, and would give to England her queenliest colony. But I know the mettle and the temper of the Dutch farmer too well to believe that he will ever stultify the record of his fathers; he abhors British rule, and has braved every danger to escape it.

Like ships caught in an Arctic ice-floe, the two little Republics are now quivering in every timber, fringed around as they are with dangers and misrepresentations of British diplomacy.

We should not be Americans if our sympathy did not go out warmly to them.

If we now proceed with our inspection of the town, we shall find, upon a more intimate acquaintance with it, that it has a very agreeable society; that there are five large churches and a Jewish synagogue, two theatres, a fine club, and schools. We shall find good tailors, and ladies' and gentlemen's outfitting stores, and it is a fact that the milliners of Capetown, which is notably a gay city, reserve their best ball dresses, laces and other goods for ladies for the diamond field market. There are three sound banks, numerous hotels, and "canteens" or drinking saloons innumerable.

A line of telegraph connects the town with Port Elizabeth and Capetown; and even the modern skating-rink, with latest fittings, has found its way there.

From open doors anywhere may be heard the sounds of pianos. A fashionable society keeps up all the observances of social life—makes calls, goes driving, gives evening dinners, and now and then a large ball. Dress suit and society paraphernalia are indispensable.

Carrying weapons is unknown, except, perhaps, in a night ramble. Violence and robbery are infrequent, and meet with prompt punishment in the courts. An abundant supply of negro labor allows men of education and capital to engage in the occupation of "digging." This word must therefore be disassociated from its conventional idea of roughness and lawlessness.

The population may be roughly divided into 4,000 diggers, 2,000 buyers and sellers of diamonds, and 2,000 engaged in other pursuits, such as trades, store-keeping, etc.

Such is a general view of the diamond city of Kimberley—a city which has even now a white population of 8,000, and from 10,000 to 15,000 blacks. In the immediate neighborhood are also the towns of Dutoit's Pan, Old De Beers and Bultfontein.

And this is the marvel of the whole sight : that every piece of timber, every sheet of iron and tent-cloth to build these houses, as well as their contents of furniture, piano, billiard table and utensils, and more, much of the daily food, has been dragged on ox-wagons from the sea coast up over the long, weary desert.

After the visitor to our Centennial had made the rounds of the vast Machinery Hall, and met at every turn its thousand little independent machines, all deriving their motion from an unseen and central force, it was at last a relief and a satisfaction to stand before the mighty Corliss engine, and see the throbbing centre which animated the whole outlying network around it. And the visitor who has thus far seen only the town life around the mine, and approaches that have led to it, may well feel some curiosity to penetrate to the heart of the whole fabric.

Almost any street leads to the mine. We ascend the mound of sand which surrounds it, and walk to its edge, or as near as we dare, for one glance down makes the strongest-headed withdraw to make sure of his balance and secure a good hold. Before and beneath us lies an abyss—a mighty oval-shaped cauldron—open full to the skies. We look over its edge, down a sheer descent of two hundred feet, as deep as the Palisades along the Hudson, and across from side to side a thousand feet, or a fifth of a mile. One stands bewildered and a little dazed at the *volume* of the view, if I may so express it. There are ravines and cañons hundreds of times deeper and broader, which cannot create a like effect. There are hills higher than the pyramids, but we look upon them unmoved. We are used to the wonders of nature, but we have not seen a creation of human hands of this magnitude. We do not view a completed monument of human industry standing in silence and solitude, but we are looking at an act of creation—hands are warm upon us—it grows before our very eyes. Little by little the facts unfold and steal upon the attention. One finds that he is talking to his neighbor as to a deaf man, for a steady hum or roar of blended Babel sounds fills the air. It is the hum of human voices and the whirr of buckets ascending and descending on their wire ropes. Ten thousand men are working below and around us—five thousand down in the pit and five thousand around its edge. As one looks down, all is in plain sight, for there is no burrowing under ground. Far below, little black pigmy men—so they seem in the distance—are moving about, but not singly or at random, for closer observation shows that they are working in groups, each group upon a certain well-defined square patch of solid earth, at which it is picking and delving, or walking to and fro over it, carrying little buckets of loosened soil. In their

midst sits or stands a white overseer, or the master himself, silent observer and director of all their work.

Spreading over the whole excavation or pit, cauldron, pot or basin, whichever conveys the clearest idea—like a spider's-web on a dewy morning—run innumerable little white threads, so they seem as they glisten in the sun. Follow one such thread to our feet, and it will be found to be a shining wire rope, worn white with constant use. But, to understand more thoroughly the sight before us, we must go back a little in its history.

Six years ago nothing distinguished this spot from any other on the level plain of the semi-desert. A small party of prospectors went out from Dutoit's Pan, and scratching about in the sand under a tree, where now is the center of the mine we have just been looking into, found a few small diamonds. Straightway from Dutoit's Pan, from Old De Beers and Bultfontein occurred what is called a "rush" to the new mine, whence "New Rush," one of its present names, though better known now as Kimberley.

The Diggers' Committee, an influential elective body, had made it a rule that when such a "rush" occurred, each individual might mark out for himself with stakes a "claim" of 31 feet square, the discoverer of the spot having two such "claims." The boundary lines were then accurately measured by a surveyor, and thus, once established, held good all the way down, though, of course, only imaginary lines.

The three mines previously discovered had been found to be situated at gently rising swells, called by the Dutch a "kopje," or little hill, and this last proved no exception to the rule. All round about over this "kopje," over perhaps a space of twenty acres, pegs were driven in, marking out each man's property or "claim" of 31 feet square. It only remained to each to work at it steadily, and pay a tax of two dollars and a half per month, to be absolute owner of his claim.

With previous experience as a guide in the new mine, a rule was made and enforced that every particle of earth loosened up should be carried out of, and away from, its borders. To secure this object, roadways crossing all the claims were at first left intact. The soil proved unexpectedly prolific in diamonds. At first it was a fine, red, alluvial sand, such as covered the whole country about, and from which bricks are made to build the Boer farm-houses, the same red soil forming the cement for walls and floors.

When two to four feet of this layer had been carried away, a layer of chalk nodules and chalky clay was reached. These nodules also contained diamonds, but were so excessively difficult to break that the digger, in his haste and excitement, threw

them aside; and they lie in forgotten heaps about the mine still unbroken. I have seen a large white diamond embedded in one of these chalk nodules which had been broken by a heavy hammer. Under the chalk layer came a brittle, yellowish, white mass of soft rock; this, too, quite rich in diamonds, and easily workable.

But as the basin deepened, it was found to have a regularly defined edge of talcose shale, rising like a cliff all around. Beyond this, *i. e.*, to the outside, no diamonds could be found, and it was, therefore, left undisturbed, receiving the name of the "reef."

When digging was superficial, no one knew where the "reef" was, and of the many claims marked out at first, only those were of value which came within the area thus defined by a natural wall. In short, the diggers found they were working out a pocket of about nine acres in extent.

It will make the nature of the reef plainer to state that wherever one digs, say a well or other excavation, either quite near to the mine or a hundred miles away, under the chalky layer above described, exists a layer of this soft, stratified shale, from twenty to thirty feet in depth. But over the mines or diamondiferous pockets, no such layer exists. Some force from below or above has punched a hole out of this crust, leaving the round basin with edges accurately defined by the rugged edge of shale.

The contents of the mine, or pocket, *i. e.*, the diamondiferous conglomerate soil, or rock, lie pressed up against the "reef," fitting into its every undulation, depression, seam and crevice, as closely as hot lead would have adapted itself to the same mould.

Work under the intense excitement went on with wonderful rapidity, when one considers that all the soil removed had to be drawn up in rough buckets of ox-hide, which contained hardly two shovelfuls of earth. And soon, at a depth of from fifty to sixty feet, a very solid conglomerate rock was reached, of a gray-blue color, which received the name of "blue stuff."

Immediately at sight of this layer, the cry of "hard pan" was raised, and many sold out their claims at a loss.

But the "blue stuff," though harder and tougher than any layer before met with, proved also to be very rich in diamonds, and work into it was pushed on with vigor. In no other mine had this hard layer been attempted, though it existed in the same relative position, because either the diggers had not gone so deep, or water had trickled in and filled their claims.

By this time a single "claim," of 31 feet square, had become worth from \$5,000 to \$40,000; \$20,000 was not an unusual price to give. There were over 400 full "claims" left within the circling folds of the "reef." But their numerous subdivisions to

halves, quarters, eighths, and even sixteenths, made at least 1,600 independent focuses of labor on the floor or bottom of the mine, for floor it can hardly be called, since it is far from level. People dug fastest in sections of the mine which paid best, whence it resulted that the whole outer circumference of the basin was worked down much deeper than the centre.

Again, individuals differed much in energy, whence it followed that each little patch or portion of a claim was worked out to different levels. Thus, both causes conspired to make the bottom of the mine most irregular in appearance; here a turreted block, rising high in air, and there a hole, yet always preserving a checker-board appearance of lines and boundaries, all at right angles. From week to week the effect of work thus irregularly applied was singularly kaleidoscopic. Let a few days pass, and where stood a tower was an excavation, and where once was level floor rose a mighty, square-hewn pile. The roadways, eleven in number, had long since been dug down to the general level.

Retaining plainly in mind a hollowed-out oval pocket 1,000 feet long, 700 feet broad, and 200 feet deep, we turn to its upper edge or brim, called, as we know, the "reef," and find there a scene of life and labor even more animated than below.

All around the edge, but chiefly on two opposite sides, is erected a strong framework of timber called the "staging," estimated to have cost \$250,000. It is built in three tiers, like a three-story house, and each tier is floored, to afford standing room for laborers. Firmly set all along each tier of this staging, are hundreds of wooden wheels, about four feet in diameter, with a crank on each side, to be turned by four Kaffirs.

The iron ropes to which I have alluded as forming a net-work over the mine, run from every part of the circumference, but differ greatly in length—some extending vertically down the reef, some far out into the centre of the mine, and others to varying intermediate distances, but each to its own claim. Such a rope is stretched from the bearings of each wheel on the staging to its corresponding claim below, where it is made fast to a post sunk firmly in the ground. Thus, a wheel, a wire rope and a "claim," be it only a sixteenth, are inseparable, and equal in number. The "blue stuff" is difficult to loosen from its bed, but this is effected by repeated blows from a very sharp pick, or, where it is exceedingly hard, by driving in long wedges, and thus splitting off pieces. Blasting has been resorted to but little, since its effects extend into other people's claims.

Two Kaffirs, all day, will pick loose as much as four at the wheel above can pull up. A working gang is thus distributed for the day: below, in the claim, an overseer and four Kaffirs;

two Kaffirs pick, and two fill the buckets which ascend and descend on the wire rope I have just described.

Above, on the reef, are six Kaffirs—four to turn the wheel or windlass, one to receive the ascending bucket laden with diamondiferous soil, and another to carry it back a few rods and empty it at a depositing place.

This makes a gang of ten, though twelve can be used to advantage, and in this manner from eight to ten cartloads can be hauled up and out in a day.

Most of the large diamonds, *i.e.*, from twenty carats upward, are found during the “picking” down in the mine, owing to the fact that the cement-like “blue stuff” fractures or splits most easily through the spot occupied by any hard pebble such as the diamond.

It is here, in the claim, that many diamonds are stolen by the negroes, who are as adroit with their toes as with their hands, and will walk about all day with a diamond held in their foot.

Instances of their cleverness are often coming to light. For instance: a digger was ill, and sent his brother down to watch the picking. Being a new hand at this duty, he watched very closely. On returning at night he reported “No luck whatever, not a chip, and I watched them close.” Shortly after, the head Kaffir came up to his “baas,” or master, who was lying ill, and handed him nine small diamonds, saying, as he pointed to the brother who had watched him all day, “He no my baas.”

If the Kaffirs mean to steal, it is almost impossible to stop them. Diamonds get into their mouths, ears, and smoking pipes. They swallow them; or, if the diamond is very large, and is not seen by the overseer, they leave it where it is, covered up with loose soil, and return for it in the night.

A Kaffir was seen beyond any chance of mistake to put a diamond into his mouth. He was immediately seized and carefully overhauled, but no diamond could be found. There were no hollow teeth and no unusual cavities. The master began to doubt his senses. But upon tying the Kaffir over a barrel and administering a few sharp blows, a beautiful gem rolled—out of his mouth.

The digger’s work is only half done when he has got the blue stuff out of the mine. It is next carted to his “compound,” where the diamonds are to be extricated from it.

But first, a few words as to the nature of the “blue stuff,” a term necessarily used frequently. The character of the diamondiferous ground is identically the same in all of the four neighboring mines. It appears to be a pudding-stone formed in the presence of water. Its general character is that of a soft pulverulent ground mass, composed of a mineral soapy to the touch. In this ground

mass are interspersed fragments of shale, round waterworn pebbles of trap, agate and jasper, bronzite and smaragdite, garnet and ilmenite, hyalite and hornstone, calcite and diamonds. The rock is thus described* by Prof. Maskelyne, who has examined specimens of it :

"The analysis of the several minerals composing the rocks will be seen to exhibit this once igneous rock in the light of a bronzite rock, converted, except where the remains of crystals have still survived metamorphism, into a hydrated magnesium silicate which has the chemical character of a hydrated bronzite.

"It is probable that the calcite is an infiltrated ingredient, and that the silica has been imported by the agency of water."

If this rock is dried thoroughly in the sun for several weeks and then wet with water, it falls to pieces into a soft, slimy, muddy mass, which envelopes the varied constituents enumerated—a fact which is put to most practical use in separating out the diamond. Diamonds are scattered with remarkable evenness throughout this conglomerate. Two are never found together or even near each other.

It is not here the place, nor is there time, to enter into any of the theories of the formation of the mine or of the diamond. Certain it is that the diamond was not formed where it is now found, for every variety of fragment occurs, as well as the perfect stone, imbedded alike in the conglomerate. A half-stone with ragged edges of cleavage was certainly never crystallized in a casing which surrounds all its fractured inequalities. The second half of a split stone is never found. And evidently the diamond is only an accidental ingredient of the pudding-stone. Its true matrix remains to be discovered.

In regard to the mine, the favorite theory is that of a mud volcano, of which it was the throat or pipe, and the contents the result of the decomposition of an original rock below which contained diamonds. A strong point in favor of this theory is the fact that the diamonds of each of the four mines are characteristic of it, and their locality generally recognizable. We must dismiss the point here, only observing that there are many facts wholly unexplained by this theory, such as the existence of diamonds in the different layers on the top, and the presence in the conglomerate rock of water-worn agates, chalcedony and other polished pebbles.

Certain claims consist of almost a solid mass of pebbles containing just enough cement to hold them together. These

* *Quart. Jour. Geological Soc.*, Nov. 2, 1874.

pebbles are all rounded. Also, the ilmenite, or titaniferous iron ore, is in most instances found with smooth surfaces and ground down to nodular pieces of the size of a marble.

I can only here suggest, by drawing attention to the water-worn character of many of the ingredients of the conglomerate, a theory which has not yet been advanced, *i. e.*, that of glacial agency.

The "compound," to which the diamondiferous soil is carted, is a most interesting place, signifying in general a private plat of ground, fenced in or not. It is in reality the digger's home. Here he erects a simple tent or builds a permanent house. Tents for his Kaffir workmen, whom he generally feeds, and stables for his horses, spring up around him. He digs a well, sets up his washing machine for diamonds, and gathers about him a host of windlasses, runners, buckets, shovels, picks, sieves, old wire-rope, and odds and ends of digging tools.

Next in importance to his house and his well is the "floor," or "depositing ground." This is simply an earth floor, beaten down hard by constant walking and working upon, and swept as clean as any household floor. Upon its brick red surface a diamond the size of a pin's head would be readily seen. Here the "blue stuff" from the mine is dumped from the carts, and now another gang of ten Kaffirs is required to work it over. In the early days the rock was broken by clubs to a fine mass, passed through sieves, the coarse residue put upon impromptu tables and sorted. By this process, diamonds less than a carat in weight were lost.

This was the universal practice for three years, until 1874, when the method of separating by means of water was introduced—a step which, next to the original discovery of the diamonds themselves, was the most important event in the life of the Fields. For three years the piles of siftings had accumulated, forming great mounds all over the town, which were known to contain many diamonds, but equally well known to be unremunerative if worked over by the usual dry process. It was a time of considerable commercial depression, and a large crowd of men were out of both capital and work. The washing machine introduced new life into the whole community. The owners of claims in the mine adopted it, and soon every abandoned pile was beset by crowds of eager workers, who, in some instances, bought the right from owners, or in others appropriated such mounds as they found unclaimed. It was difficult to save the streets from the assiduity of the washers, and many a front yard, laid down deep with dry, sorted soil, now became of new and great value. I remember one family who took up the floor of their house, which was originally of "claim stuff" sorted over once, and found, by washing it, enough diamonds to give them a new start in the

mine. The washing process flooded the market with very small diamonds which had before escaped, though even now, so rude and incomplete is the method, all diamonds of the size of a pin's head and under are lost.

All the machines are constructed on the general plan of puddling, *i. e.*, reducing the mass to the consistency of thin mud, and then by agitation allowing the thin parts to run off and retaining the heavy portions of garnet, iron ore and diamond. The machine in common use is the simple cradle with ripples; the cradle is rocked and the mud runs over the ripples, while the diamonds, being of superior specific gravity, are caught by them. According to the machine, six to twelve cartloads can be washed per day, leaving a heavy residuum of perhaps a bushel of garnet, ilmenite and iron-stone pebbles, which must be sorted over by hand for diamonds. The cost of such a machine is about \$60. Another puddling machine does its work in a circular trough, by means of iron teeth kept constantly moving around in it by horse power.

This machine washes about twenty-five to thirty cartloads per day. Its cost is about \$1,000.

A still better, but more expensive, machine has been invented, but its high cost places it beyond the reach of any but companies. Diamond digging is expensive. We will take, for example, the average digger, who owns a quarter of a claim and works his own ground. He can take his choice, according to locality, of paying from 1,000 to 10,000 dollars for his quarter claim—*i. e.*, $7\frac{1}{2}$ feet by 31 feet.

It pays best to buy high-priced ground. His outfit of digging tools, washing machine, &c., will cost say \$1,000. He requires a gang of 20 Kaffirs, which will cost him \$5 each per week, or \$100. One overseer besides himself, \$25 per week. Meat and tobacco for Kaffirs, \$5 per week extra. Then expenses of carting and taxes will make his total outlay at the least \$200 per week, or over \$10,000 a year, exclusive of his own expenses of living.

An arrangement much in practice is for the owner of claims to let out his ground on percentage. In this case the working expenses are the same, and are borne by the lessee, who retains from 60 to 70 per cent. of the value of diamonds found for his share, and pays to the lessor the balance of 40 to 30 per cent.

Practically, if a man is not prepared to spend \$800 per month, I believe it is of no use to go to Kimberley to dig for diamonds.

To offset this expense is, of course, good luck in "finding," and from the first moment of commencing operations the digger often not only clears expenses, but makes a handsome profit.

The rub is to dare to begin and to dare to fail. There is no

doubt that diamond digging pays two-thirds of those who engage in it well. The fortunes made, as a rule, are small and numerous. Rarely has any one cleared \$50,000 from any one claim. Success seems to be very evenly distributed, and chiefly attainable to those who can begin with a small capital—say from \$3,000 to \$5,000.

The amount of money paid for Kaffir labor alone is enormous. For instance, there are a thousand wheels; allowing five Kaffirs to each, we have 5,000 laborers daily at the mine. These, at \$5 each per week, are paid \$25,000, or \$100,000 per month, or \$1,200,000 per year, and this for 5,000 Kaffirs only.

The assessment of the Kimberley mine for the year 1876, simply for the purpose of distribution of rates or taxes, was \$5,151,500, or about \$7,000,000, if we add a third to bring the first amount up to selling prices.

And now a word about the Cape diamond. In general it contains yellow coloring matter, ranging through every shade from deep orange yellow to the faintest straw color. But there are also stones as white as any from India or Brazil. With regard to the degree of yellow coloring matter contained in them, they are thus ranged: White, Cape white, bye-water, off color and yellow.

A few milky white are found, now and then pale blue, and even blue, but never as yet of large size. Brown and pink are usual and common, next to the off-colored or yellow, and not much esteemed. Small green stones are also seen. Black and perfect I have never seen, but black and fractured are very common.

The yield of Cape diamonds may be thus classified: 10 per cent., first quality; 15 per cent., second quality; 20 per cent., third quality; and the remaining 55 per cent. consisting of "boart," used for cutting diamonds and other stones.

There is no "carbon" or "black diamond," such as is found in the Brazil mines, and which is used now so generally in the various diamond saws and diamond drills. The Cape "Carbon"—so called—once imported in large quantities, under the impression that it was an imperfect form of the diamond crystal, and could be used for cutting purposes, is simply ilmenite or titaniferous iron ore. Cape boart, the nearest approach to true "carbon," is of a crystalline, brittle texture, and not sufficiently tenacious to be of use in saws and drills.

A curious fact is the "bursting" or "splitting" of a diamond. This occurs only to "glassy stones," which have—be it ever so faint—a tinge of brown in them. They are usually perfect octahedrons, with little beveling at their angles, and are of much harder quality than others, except the black, which seem to be

an advanced stage of the same conditions. Such a stone comes clear and brilliant from the mine, and perhaps in an hour a little "feather" or fracture points towards its centre; or, laid aside for the night, it is found in the morning lying in fragments. The "splitting" is due, probably, to the water absorbed between its laminae having dried out.

The diggers wrap such stones, as soon as found, in cotton, or put them in oil until the moment of offering them for sale. Glycerine would probably answer better.

The Cape diamond has no adhering skin or envelope, as is the case with the Brazilian. It shines like a piece of bright glass wherever it is found. There is, to be sure, a delicate film of infiltrated calcite about those imbedded in the "blue stuff;" but this film adheres to the imbedding rock, and not to the diamond.

Almost every modification of the system of crystallization to which the diamond belongs occurs except the cube. Octahedrons, either perfect or beveled, are the most common. Perfect dodecahedrons are not unusual. Twin stones, macles and agglomerations of tiny crystals occur frequently. One specimen of a geode or hollow diamond has also been found.

The diamonds from the river and each of the four mines have recognizable peculiarities. Those from the river are invariably water worn, looking more or less like ground glass, and noted for being whiter than any other. They bring the highest price.

Stones from Dutoit's Pan are in general large, and off-colored and yellow.

Bultfontein has a totally different kind of stone. It is a small beveled octahedron, and "pocked" or pitted, giving it a frosted appearance; while Kimberley has, as a rule, not as large diamonds as Dutoit's Pan, but whiter—also a larger proportion of split, flawed and spotted stones and boart; never a frosted stone. It is also remarkable, but beyond question of doubt, that two sections of the Kimberley mine yield quite different diamonds. In the "West End," so called, are found only "glassy stones," *i. e.*, regularly formed octahedrons, generally of excellent white color, while elsewhere the stones have rounded and beveled edges, and more of them are off-colored. The color of the diamond and its form of crystallization have some remarkable and unexplained association. The popular notion that the Cape diamonds are *all* yellow or off-colored, is a myth—many are white.

The total yield of diamonds from the Cape mines to the end of 1876, has been estimated at \$85,000,000, a sum calculated from shipments known to have been made. But both digger and diamond buyer carry home privately large packages of diamonds whose value would much augment this amount.

The diamond fields are situated upon the vast plateau of

Southern Africa, which has a general elevation of 5,000 feet above the level of the sea, and have a most agreeable and healthy climate, though the absence of trees and running water might at first give an impression to the contrary.

The average register of the aneroid barometer is 26.50.

In January, the hottest month, the average maximum temperature for the day is 90° Fahr., the minimum 50°, and in July, the coldest month, average maximum temperature is 70°, the minimum 30°. A range of 40° for each season. The nights are always cool.

I have no means of ascertaining the rainfall. It is sufficient to clothe the "veldt" in a moderate verdure during eight months in the year—from September (spring) to May (autumn), but not sufficient to make gardening practicable, except by aid of artificial irrigation.

Thunderstorms are severe, and the water falls in sheets. Dust storms are a frequent source of discomfort.

The rate of mortality in Kimberley is exceedingly small. It is not officially reported, but I quote from the mortality register for two extremes of seasons, January (hot) and August (cold). In January there were 9 deaths; in August, 20.

More people die from the effects of careless exposure to cold in the winter months of July and August than die from diseases incident to the heated season, which speaks volumes for the salubrity of the climate.

It is a very remarkable fact, and one that I have not seen commented upon, that rabies and hydrophobia are unknown in Southern Africa. No better opportunity for confirming this observation could exist than in the diamond fields communities, where every man, woman and child owns a dog. Unruly curs are kept in almost no restraint, and by night are the greatest nuisance and danger in the town. People are constantly bitten by them, and yet, during my two years' residence there, no case of hydrophobia occurred, and there has not been, I believe, a recorded or reported case in the whole colony.

If a man was bitten he simply remarked, "Well, they don't have hydrophobia out here, so it is all right."

The same absence of rabies and hydrophobia is noted in Tasmania and Guiana.

It apparently never occurs to the digger to inquire into the unstable nature of the whole Kimberley fabric. Immense sums of money are invested in and around the mine, and owners of town lots, of houses, of public buildings, and of claims, have settled into the calmest feeling of security.

But a chance as fickle as a puff of wind may at any moment ruin the whole community. For, supposing that the mine is not

a volcanic pipe, but only a rift or chasm filled in by glacial debris, or even hollowed out by glacial action—then the pick that strikes hard-pan shatters every man's fortune. Or the same pick may tap a spring and flood the mine with water. But no such fear disturbs the digger of Kimberley. His belief in the immortality of the mine is supreme. But in spite of his confidence, there are influences at work which are crowding the small capitalist from the fields. The increasing depth, crumbling reef, inflowing water are fast multiplying the expenses of working. The great bugbear of the digger is the word "company," but even now small proprietorships are becoming merged in large aggregations of claims, and the next phase of mining operations must undoubtedly be that of several large and competing companies, or perhaps a single one controlling the whole mine.

Then the individual romance of diamond hunting will be over. But there is no danger that the diamond will ever become common. The world's supply, as far as known, for the future, is sparsely scattered in the depths of a seven-acre mine. Nature has placed the diamond in lands difficult of access, and it is likely to remain a royal gem, surrounded with the seclusion of royalty.

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THE OBJECTS OF THE SOCIETY are to encourage geographical exploration and discovery ; to investigate and disseminate new geographical information by discussion, lectures and publications ; to establish in the chief maritime city of the country, for the benefit of commerce, navigation, and the great industrial and material interests of the United States, a place where the means will be afforded of obtaining accurate information for public use of every part of the habitable globe. The Society has been in existence for twenty years. It has seventeen hundred and fifty Fellows, a geographical library of ten thousand volumes, and a large and very valuable collection of Maps, Charts, and Atlases relating to every part of the world. It publishes a Bulletin, an annual Journal, and co-operates and interchanges information with thirty-three foreign Geographical Societies. The initiation fee and annual dues of a Fellow for the first year are \$10 ; and the dues \$10 yearly thereafter.

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